REMARKS

In the patent application, claims 2-32 are pending. In the final office action, all pending claims are rejected.

Applicant has canceled claims 20, 24, 26 and 30, and amended claims 2-7, 13-19, 21-23, 25 and 27-29.

Claim 2 has been amended to include the limitations that the transform coefficients representative of the residual data are obtained and modified.

The support can be found in Figure 6 and page 12, line 12, showing transform coefficients 120.

Claim 3 has been amended to include the limitations that motion compensated prediction data are obtained from decoded video data and transformed for providing the editing.

The support can be found in Figure 6 which shows decoded video data 132 and the motion compensated prediction data 136 are obtained from the MC prediction block.

Claim 4 has been amended to be dependent from claim 2.

Claim 5 has been amended to include the limitation that the transform coefficients are modified in a time domain.

The support can be found in Figure 6 showing a summing device 24 for modifying the transform coefficient in the time domain.

Claim 6 has been amended to include the limitation that the decoded quantized transform coefficients are inverse quantized for obtaining the transform coefficients.

The support can be found in Figure 6, inverse quantization module 20.

Claims 7 and 16 have been amended to include the limitation of scaling the transform coefficients.

The support can be found in Figure 6, block 40, and page 12, lines 15-17.

Claim 13 has been amended to claim an apparatus comprising an inverse quantizer and a summer.

The support can be found in Figure 6, blocks 20 and 24.

Claim 14 has been amended to include the limitation of a quantizer for quantizing the modified data.

The support can be found in Figure 6, block 26.

Claim 15 has been amended to include the limitation of a predictor and a transform module.

The support can be found in Figure 6, MC prediction block and block 38.

Claim 17 has been amended to include the limitation the combining is carried out in the time domain.

The support can be found in Figure 6 showing a summing device 24 for modifying the transform coefficient in the time domain.

Claims 18, 19, 21-23 and 25 have been amended to claim an apparatus. Claim 18 has been amended to include the limitations that the transform coefficients representative of the residual data are obtained and modified.

The support can be found in Figure 6 and page 12, line 12, showing transform coefficients 120.

Claims 27-29 have been amended to include the limitations that the transform coefficients representative of the residual data are obtained and modified.

The support can be found in Figure 6 and page 12, line 12, showing transform coefficients 120.

No new matter has been introduced.

At section 6 of the office action, claims 2-10 and 13-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dischert et al.* (U.S. Patent No. 5,802,226 A, hereafter referred to as *Dischert*), in view of *Christopolous et al.* (U.S. Patent No. 6,526,099 B1, hereafter referred to as *Christopolous*).

It is respectfully submitted that independent claims 2, 13 and 18 include the limitation of obtaining transform coefficients representative of residual data from the bitstream. Independent claim 27 includes the limitation of applying editing data to transform coefficients representative of residual data.

Dischert discloses two embodiments. The first embodiment is concerned with mixing current video signal with a delayed video signal. The first embodiment has nothing to do with transform coefficients representative of residual data. The second

embodiment is concerned with producing a mixed audio/video signal during trick play modes (such as fast forward).

The second embodiment is shown in Figures 4, 5 and 6. As shown in Figure 4, *Dischert* uses a shuffler 406 to rearrange a portion of the audio signal from the audio analog/digital interface 402 so as to provide accurate image reproduction during the trick play mode (col.4, lines 36-45) and to distribute errors caused by defects in the tape over a larger audio surface. *Dischert* also uses a separate shuffler 408 to rearrange a portion of the video signal from the analog/digital interface 404 so as to provide for accurate reproduction of the video signal during the trick play mode and to distribute errors caused by defects in the tape over a larger video surface (col.4, lines 46-52). Before mixing the rearranged audio signal and the rearranged video signal, a coder 410 is used to transform the rearranged video signal into a transform video signal (Figure 4; Figure 6; col.4, lines 52-54; col.5, lines 47-60). As shown in Figures 4 and 6, *Dischert* uses a coder 410 to mix signals from the shuffler 408 after transforming the signals with a DCT module 60 (see Figures 6) into a second domain such as the spatial frequency domain. The second domain can be a spatial frequency domain (col.5, lines 47-52). However, *Dischert* fails to disclose obtaining transform coefficients representative of residual data as claimed in claims 2, 13 and 18. *Dischert* also fails to disclose applying editing data to transform coefficients representative of residual data as claimed in claim 27.

The Examiner admits that *Dischert* fails to disclose obtaining and processing residual data, but point to *Christopolous* for disclosing residual data.

It is known that residual data, as disclosed in *Christopolous*, is a value within a frame of video data related to a value in a neighboring frame. In particular, error data is used for motion compensated prediction in reconstructing frame based on the previous frame. If error data are rearranged in a shuffler 408, it may not be possible to reconstruct the video signal in a frame based on the previous frame. Thus, in order to incorporate the residual data or error data as disclosed in *Christopolous*, the shufflers and the de-shufflers must be taken out in any video recording and playback device. If the shufflers and the de-shufflers are taken out from the video recorder and playback device of *Dischert*, the trick play modes may no longer function.

In the final office action, the Examiner states that *Dischert* discloses "The output video signal ... is provided to the shuffler 408 which also re-arranges portions of the digital video signal" (column 4, lines 47-49). The Examiner states that the "portions" of the video signal are not necessarily frames themselves. If shuffling is performed on an intra-frame basis, rather than an inter-frame basis, the shuffling would not affect frame dependencies in residual-coded data. The Examiner points to *Jang* (U.S. Patent No. 6,178,289 B1) to show that shuffling is performed on a per-frame basis (column 1, line 12; column 2, line 45) wherein the blocks are re-arranged within a frame in a known pattern, not the frames themselves.

Applicant respectfully disagrees.

Jang discloses a technique used in digital video cassette recorder (VCR) (Abstract). However, *Jang* does not disclose a playback mode and, therefore, the shuffling is different from *Dischert*. *Dischert* discloses a playback system using a helical track system (Figure 4). It is known in that art that (see *Kim et al.* U.S. Patent No. 5,479,265, for example) in the change-speed playback mode, the video data recorded on the video tape is scanned by a head disposed in a spiral form. As such, only a small portion of the video data recorded on the tape is repeatedly scanned. A large portion of the video data, called covered-up portions or no-playback portions, is not scanned. For the purpose of preventing degradation in a picture quality due to the no-playback portions, the playback portions and the no-playback portions are shuffled with each other and then recorded on the video tape. The shuffled video data are recorded and played back. The shuffling of the video data is an important factor of determining the recording format.

In a six-time playback mode, for example, only one sixth of the video data is scanned and displayed. Because of the data shuffling, the portion of the video data scanned in one frame may not be the same portion that is scanned in the next frame. For that reason, the residual data from one frame may not be useful for the next frame because of the data shuffling. In other words, in order to render residual data useful, the same portion of the video data in a plurality of frames must be repeated scanned. But this is exactly opposite to the reason why video data from different portions are shuffled in a change-speed playback mode.

It is known that residual data, as disclosed in *Christopolous*, is a value within a frame of video data related to a value in a neighboring frame. In particular, error data is used for motion compensated prediction in reconstructing frame based on the previous frame. If error data are rearranged in a shuffler 408, it may not be possible to reconstruct the video signal in a frame based on the previous frame. Thus, in order to incorporate the residual data or error data as disclosed in *Christopolous*, the shufflers and the de-shufflers must be taken out in any video recording and playback device. If the shufflers and the de-shufflers are taken out from the video recorder and playback device of *Dischert*, the trick play modes may no longer function.

For the above reasons, the residual data or error data as disclosed in *Christopolous* cannot be used in a data shuffling system for change-speed video playback mode, as disclosed in *Dischert*.

Dischert, in View of *Christopolous*, Fails to Render Claims 2, 13, 18 and 27 Obvious

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion of modification to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). *See* MPEP 2143.01 V. In the instant case, the use of residual data, according to *Christopolous*, instead of regular digital video data, would render the video device as disclosed in *Dischert* unsatisfactory regarding its trick play modes.

Likewise, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). *See* MPEP 2142.01 VI. In the instant case, the removal of the shufflers in order to accommodate the residual data according to *Christopolous*, would render the video device as disclosed in *Dischert* less accurate or even non-functional.

Furthermore, the test for prima facie obviousness is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instant case, a skilled person who has the knowledge of the trick-play modes, according to *Dischert*, is not likely to

search for a document that discloses a transcoder specifically designed for implementing a simultaneous change in rate and in resolution, as disclosed in *Christopolous*. The principle of this particular transcoder itself is not useful in a trick-play mode video recorder and playback device, because *Dischert* has nothing to do with the change in rate and in resolution. Furthermore, the fact that the transcoder operates on error data is not useful in the video device of *Dischert* because the introduction of error data will drastically change the operational principle of *Dischert*. More important, the cited *Christopolous* reference itself has no suggestion as to how a video effect can be carried out. Thus, a skilled person who is knowledgeable about the transcoder, as disclosed in *Christopolous*, is unlikely to think of modifying the transcoder into a video effect producing apparatus.

For the above reasons, *Dischert*, in view of *Christopolous*, fails to render claims 2, 13, 17 and 18 obvious.

As for claims 3, 5-10, 14-17, 19-23, 25, 28, 29 and 31, they are dependent from claims 2, 4, 13, 18 and 27 and recite features not recited in claims 2, 4, 13, 18 and 27. For reasons regarding claims 2, 4, 13, 18 and 27 above, *Dischert*, in view of *Christopolous*, also fails to render claims 3, 5-10, 14-17, 19-23, 25, 28, 29 and 31obvious.

Furthermore, claim 3 is dependent from claim 2 and further includes the limitations of obtaining motion compensated prediction data from decoded video data; and transforming the motion compensated prediction data for providing editing data for use in said modifying.

Both *Dischert* and *Christopolous* fail to disclose those features. Thus, the cited *Dischert* and *Christopolous* references, whether used individually or in combination, fail to render claim 13 obvious.

At section 7, claims 11, 12 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Dischert*, in view of *Christopolous* and further in view of *Oguro* (U.S. Patent No. 5,477,276). The Examiner cites *Oguro* for disclosing advance fade-in effects.

It is respectfully submitted that claims 11, 12 and 32 are dependent from claims 2 and 27 and recite features not recited in claims 2 and 27. For reasons regarding claims 2 and 27 above, they are also distinguishable over the cited *Dischert*, *Christopolous* and *Oguro* references.

CONCLUSION

Claims 2-19, 21-23, 25, 27-29, 31 and 32 are allowable. Early allowance of all pending claims is earnestly solicited.

Respectfully submitted,

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Date: August 4, 2008

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